

These erratics could have reached these localities only by iceberg transport, and excepting during a cold epoch icebergs would be melted long before they could approach so near to the equator.

The expedition noted as did Ross that icebergs were very scarce to the west of 80 deg. E, and from this circumstance they judged that much Antarctic land did not exist on that meridian. This should indicate the course for the forthcoming south polar expedition to take.\* And in connection with Antarctic expedition the small downward range of the thermometer at Kerguelen warrants us in hoping that the Antarctic climate is milder and less trying to explorers than that of the Arctic. Though the summer be chillier than that of the north, the winter is less severe. A self-registering thermometer exposed for three seasons in the Georgias never sank below  $-5^{\circ}$

At the Horn the winter temperature is very little lower than that of Greenwich, although the summer temperature is much lower, while the mean range is much less.†

Having added to our library these valuable volumes of the "Challenger" Reports, it appeared to me that the members of this Society might be interested enough in the undertaking to care to listen to these rough memoranda relating to a part of the cruise.

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ART. V.—*Plants collected in Capricornic Western Australia,*  
by *H. S. King, Esq., and recorded by Baron Von*  
*Mueller, K.C.M.G., M. & Ph.D., F.R.S.*

[Read 13th May, 1886.]

DURING the last year survey-operations were carried on between the Lyons- and Fortescue-Rivers, as well as on and near the Upper Ashburton-River, by Mr. H. S. King, under the direction of the Honourable John Forrest, C.M.G., F.L.S., F.R.G.S.; and on this occasion again, through the influence of the enlightened Minister of Lands and Surveyor-General of the colony, specimens of the plants, met

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\* *Report*, p. 430; M'Cormack's *Antarctic Voyage*, Vol. 1, p. 166.

† *Challenger Reports*, p. 877.

during the survey, were secured, and through Mr. Forrest's liberality placed at my disposal. As the region, from which this collection was obtained, is phytogeographically a most interesting one, the tropical and extra-tropical species of the western part of the Australian continent largely meeting in the tracts of country traversed by Mr. King, it is my purpose to enumerate in these pages the species obtained, by which means new localities of many rare plants will be placed on record, and some new forms will become elucidated, while by these means also some further impetus in various parts of Australia will be given perhaps for utilising the splendid opportunities, when surveys are effected in new districts, to enrich collaterally also our knowledge of the native vegetation and the resources connected therewith.

*Cleome tetrandra*, Banks; var. *grandior*. Taller and more robust; leaflets broader; style longer, very thin and curved; stigma not dilated; fruit more distinctly stipitated.

*Cleome viscosa*, Linné. Fruit always without any stipes; seeds smaller and darker coloured than those of the preceding species. The variety *grandiflora*, noted by Bentham, is in the third supplement to the *Systematic Census of Australian Plants* raised to specific rank under the above appellation. Some of the shorter filaments are remarkably thickened near the summit, almost as in the American species of the section *Physostemon*. The ripe fruit of *C. grandiflora* remained hitherto unknown.

*Byblis liniflora*, Salisbury. Fully a foot high.

*Drosera Indica*, Linné.

*Tribulus platypterus*, Bentham.

*Triumfetta chætocarpa*, F. v. M.

*Sida lepida*, F. v. M.

*Abutilon longilobum*, F. v. M. A variety with leaves less elongated and more definitely star-hairy, with calyces not always cleft beyond the middle, and with the petals usually longer.

*Hibiscus trionum*, Linné.

*Hibiscus Goldsworthii*, F. v. M. The specimens of this highly ornamental plant show larger leaves with longer lobes, also capsules of only about half the length of the calyx.

*Gossypium Sturtii*, F. v. M.

*Gossypium Robinsonii*, F. v. M.

*Gossypium australe*, F. v. M.

*Brachychiton platanoides*, R. Brown. Passes also in Eastern Australia just beyond the tropic of Capricorn.

*Euphorbia Careyi*, F. v. M. Fruit not fully  $\frac{1}{8}$ th inch long, three-lobed globular; seeds trigonous-ovate, dark-brown, minutely scaly-hairy, destitute of any appendage.

*Euphorbia Drummondi*, Boissier. Specimens over a foot broad.

*Securinega Abyssinica*, A. Richard.

*Dodonaea petiolaris*, F. v. M. Sepals five, oblong-lanceolar,  $\frac{1}{8}$ th inch long. Fruit roundish-ovate in outline, about  $1\frac{1}{3}$  inch long and  $\frac{3}{4}$  inch broad, glabrous, almost vesicular, finely veined, short-pointed at the summit, the three longitudinal expanding membranes much narrower than the cells of the fruit, confluent with each other at the upper extremity, not forming lobes on the base; ripe seeds unknown. This species was also found near the Finke-River by Rev. H. Kempe, and near the Lachlan-River by Mr. Josephson.

*Dodonaea pachyneura*.—Branchlets slightly angular; leaves narrow-lanceolar, entire, gradually attenuated into a slender petiole, prominently penninerved, as well as the branchlets densely beset with glandular dots; sepals broadly semi-lanceolar; pedicels usually two or three together, as long as, or somewhat longer, than the fruit, very thin; capsules three-celled, somewhat viscid, the expanding membranes broader than the cavities, gradually narrowed to near the very short septa, each thus almost including the appertaining roundish-turgid cell, and giving each of the three partitions of the fruit an oblique rhomboid-ovate shape, the upper margin of the membrane more truncate, the lower more rounded; septa not fully half as long as the cells and seceding with them.

The whole plant sticky from minute glandular prominences. Leaves flat, dark-green, on the only specimen obtained  $1-1\frac{1}{2}$ -inch long, above the middle about  $\frac{1}{4}$ -inch broad, some faint denticulations occasionally developed at the margin. Sepals nearly 1-10th inch long. Staminate flowers not obtained. Partitions of fruit broader than long, their membranes very divergent, conspicuously veined, rather obtuse at the terminating angle; stipes very short. Style and ripe seeds not available.

From *D. platyptera*, the nearest allied species, this new one recedes in greater viscosity, in narrower downward much more attenuated leaves, with singularly prominent and more copious nerves, as well as in the extension of the fruit-membranes along the summit and base of the cells, and further in the remarkable smallness of the septa.

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*Polycarpaea Indica*, Lamarck, var. *obtusiflora*. The plants only about two inches high, but much branched and profusely flowering; sepals rather blunt; capsule exceedingly short. Perhaps this variety will, under the above name, have to be raised to a specific position.

*Polycarpaea longiflora*, F. v. M.

*Mollugo trigastrotheca*, F. v. M.

*Trianthema crystallina*, Vahl.

*Trianthema pilosa*, F. v. M.

*Achyranthes aspera*, Linné. Reaches the most northern regions of New South Wales (Fawcett).

*Amarantus pallidiflorus*, F. v. M.

*Ptilotus obovatus*, F. v. M.

*Ptilotus exaltatus*, Nees.

*Ptilotus alopecuroides*, F. v. M.

*Ptilotus helipteroides*, F. v. M.

*Ptilotus fusiformis*, Poiret. Mr. Moritz Holtze found this plant also near Port Darwin.

*Ptilotus axillaris*, F. v. M.

*Gomphrena canescens*, R. Brown.

*Gomphrena Maitlandi*, F. v. M. Specimens with flower-heads partially axillary.

*Gomphrena platandra*, F. v. M. Under this new name a species is defined, which from the only other Australian congener with filaments dilated and at the summit bidenticulated, namely *G. conica*, differs in diffuse growth, in shorter leaves, in unchanging globular flower-heads supported by two floral leaves, in larger bracteoles of greater length than the calyx, and in the rosy colour of the sepals. From the following species it is distinguished in broader leaves, in much larger and never elongated flower-heads, as well as in the toothed apex of the filaments.

*Gomphrena conferta*, Bentham. This was found by the Hon. J. Forrest also on the Yule- and Shirlock-Rivers. There likewise *G. tenella* occurs, but with finally spicate inflorescence.

*Alternanthera triandra*, Lamarck.

*Codonocarpus cotinifolius*, F. v. M.

*Isotropis atropurpurea*, F. v. M. Fruit about  $\frac{3}{4}$ -inch long; seeds kidney-shaped,  $\frac{1}{8}$ -inch long, prominently reticulated.

*Gastrololium grandiflorum*, F. v. M.

*Crotalaria Novæ Hollandiæ*, De Candolle.

*Crotalaria Cunninghamsi*, R. Brown.

*Crotalaria dissitiflora*, Bentham.

*Crotalaria medicaginea*, Lamarck.

*Lotus australis*, Andrews. Now also known from New Caledonia, the New Hebrides and Japan.

*Psoralea leucantha*, F. v. M.

*Indigofera monophylla*, De Candolle.

*Tephrosia purpurea*, Persoon. The silky variety obtained; also what seems a form with very narrow leaflets, but gathered without fruit.

*Sesbania grandiflora*, Persoon.

*Clianthus Dampieri*, Cunningham.

*Swainsona Maccullochiana*, F. v. M.

*Swainsona Kingii*. Slightly hairy, soon glabrous; stipules very large, semicordate-lanceolar; leaflets of each leaf in two to three rather distant pairs, somewhat glaucous, nearly lanceolar, on very short stalklets, not darker above; peduncles almost capillary, fully as long as the leaves, bearing at and towards the upper end two to four rather small flowers; pedicels much shorter than the calyx, not much longer than the small lanceolate-linear ciliate bracts; lobes of the calyx narrow-lanceolar, about as long as the hemi-ellipsoid tube; upper petal considerably longer than the others, cordate-orbicular, with two faintly prominent erect lines extending from the base to beyond the middle; lower petals acute, not twisted, nearly as long as the blunt lateral petals; style towards the summit anteriorly short-bearded; ovary slender, glabrous. Between the Gascoyne- and Fortescue Rivers; H. S. King, Esq.

Branches slender; stipules mostly about  $\frac{2}{3}$  inch long; leaflets  $\frac{1}{3}$ — $\frac{1}{2}$  inch long, but occasionally the terminal one exceeding the others in size; calyces nearly  $\frac{1}{4}$  inch long. Lamina of upper petal measuring fully  $\frac{1}{3}$  inch, its stipes tender-membranous; lateral and lower petals violet-coloured towards the summit. Anthers narrow-ellipsoid. Style but slightly curved. Stigma very minute. Fruit not obtained.

This species may systematically be approximated to *S. oroboides*, which it resembles often in foliage; but the stipules in the last-mentioned congener are minute, the peduncles and pedicels thicker, the calyces permanently hairy, while the petals are less unequal in length, the lateral two broader, the lower two blunt, the upper having very prominent callosities, which terminate almost truncately just above the stipes, the style is more rigid and the ovary downy; in fruit *S. Kingii* may also prove very different. The great development of the stipules, which exceed in size

much any of the leaflets, separates this species at once from all others.

*Glycine sericea*, Bentham. Found as far north as the Mulligan-River by Mr. Cornish.

*Cajanus cinereus*, F. v. M.

*Petalostylis labicheoides*, R. Brown.

*Cassia venusta*, F. v. M.

*Terminalia circumalata*, F. v. M. This is the doubtful *Alectryon canescens* (D.C. Prodr. I, 617), which was probably described from specimens gathered during Captain Baudin's expedition, and thus likely on the west-coast, not in Eastern Australia, as so long was supposed. I owe an original specimen to the kindness of the illustrious Alphonse de Candolle.

*Pimelea ammocharis*, F. v. M.

*Hakea lorea*, R. Brown. Collected on the Upper Flinders-River by Mr. Dugan.

*Grevillea Wickhami*, Meissner.

*Cucumis Chate*, Linné.

*Melothria Maderaspatana*, Cogniaux. A variety with sessile leaves, precisely of the form peculiar to those of *M. amplexicaulis*, but with the not pedunculate staminate flower-fascicles, with the spherical fruit and with the unmarginated seeds of *M. Maderaspatana*.

*Brachycome iberidifolia*, Bentham.

*Pterocaulon sphacelatum*, Bentham.

*Helipterum floribundum*, De Candolle.

*Helipterum Humboldtianum*, De Candolle.

*Helipterum roseum*, Bentham. Eastward to Georgina-Range (Harper).

*Podolepis rugata*, Labillardière.

*Calocephalus multiflorus*, Bentham. A form with broader leaves.

*Eriochlamys Kappii*, F. v. M.

*Flaveria Australasica*, Hooker. Traced southwards to the Bogan (Wuerfel).

*Lobelia humistrata*, F. v. M.

*Lobelia heterophylla*, Labillardière.

*Scaevola ovalifolia*, R. Brown.

*Cynanchum floribundum*, R. Brown.

*Ipomoea Muelleri*, Bentham.

*Evolvulus linifolius*, Linné.

*Breweria rosea*, F. v. M. A variety with smaller flowers, also a state of this plant with grey vestiture.

*Solanum phlomoides*, Cunningham.

*Nicotiana suaveolens*, Lehmann. A minute variety.

*Mimulus gracilis*, R. Brown. Mr. St. Carey found this also on the Lyndon-River; the allied *M. prostratus* we have now also from near Everard-Range (Giles), the Wimmera (D'Alton) and Dandenong (Walter).

*Stemodia grossa*, Bentham.

*Stemodia viscosa*, Roxburgh. A form with much elongated pedicels.

*Buechnera parviflora*, R. Brown.

*Pollichia Zeilanica*, F. v. M.

*Heliotropium undulatum*, Vahl. This occurs also on the Finke-River, according to collections from the Rev. H. Kempe.

*Clerodendrum lanceolatum*, F. v. M.

*Chloanthes paniculata*, F. v. M.

*Eremophila maculata*, F. v. M.

*Eremophila Forresti*, F. v. M.

*Eremophila leucophylla*, F. v. M.

*Eremophila Fraseri*, F. v. M. Both varieties gathered of this species, the one with short roundish leaves and the other with elongated lanceolar leaves; the first mentioned is easily mistaken for *E. rotundifolia*.

*Cyperus ixiocarpus*. Stem cylindrical, finely streaked-furrowed, smooth; floral leaves three or four, the two longest of these generally much surpassing the inflorescence, channelled towards the base, thence upwards compressed-cylindrical and gradually much attenuated, smooth, one or two of the floral leaves very abbreviated; primary peduncles several, almost umbellate, unequal in length, smooth, not prominently angular; secondary peduncles almost umbellately crowded, very thin, each supported by a diminutive, narrow, bract-like leaf; spikelets almost sessile, corymbose-umbellulate, with a linear-lanceolate one-nerved glume-like bract at the base, generally but few of the spikelets in each of the umbellules; rachaeoles flexuous, simply angular, not or scarcely membranously dilated, bearing six to thirteen florets, the latter somewhat remote from each other, the two or three uppermost sterile; glumes (floral bracts) pale-brownish, almost cymbiform-ovate, mucronulate, strongly five- to seven-nerved, the middle nerve keel-like; stigmas three, about as long as the style; fruits obovate-trigonous, black, shining, viscid, apiculate, somewhat more than half as long as the glumes.

This remarkably handsome species had been already in 1882 collected on the Gascoyne-River by the Hon. J. Forrest during his trigonometric surveys there. All the specimens obtained are devoid of roots and radical leaves.

In vain have I endeavoured to identify this *Cyperus* with any of the species described by Kunth, Steudel, Boeckeler and Clarke. But this task is difficult as regards a genus containing several hundred well-marked species, irrespective of their varieties. Our plant is however traceable to a position near the tropical American *C. viscosus*; but the spikelets are not capitately clustered, nor are the florets closely imbricated; while the glumes are more scarious, evidently viscid, stronger nerved and more prominently keeled, the fruits moreover being somewhat longer, more sticky, less pyriform, nor covered by a grey pellicle.

*Setaria verticillata*, Beauvois.

*Panicum pauciflorum*, R. Brown. The fastigiata variety. This grass was obtained near Short's Range by J. Macd. Stuart.

*Eriachne obtusa*, R. Brown.

*Eriachne aristidea*, F. v. M. Specimens with leaves somewhat hairy outside.

*Eriachne glauca*, R. Brown. The leaves on the inner side towards the base sometimes hairy.

*Eriachne ovata*, Nees. A small-flowered variety was found by Mr. H. Stuart Carey on the Fortescue-River.

*Triodia Mitchelli*, Bentham. A variety with contracted panicles and with particularly large spikelets, the middle lobe of the flowering glume attaining a length of fully a quarter of an inch. Only the inflorescence in Mr. King's collection, but this as well of pale as of purplish-darkish colour.

*Pappophorum commune*, F. v. M.

*Eragrostis speciosa*, Steudel. Grain ovate, three or four times shorter than the flowering glume. Mr. Ch. Winneke brought a dwarf form of this grass from Eyre's Creek.

*Eragrostis eriopoda*, Bentham. Collected also near Charlotte-Waters by Mr. E. Giles, and between the Lachlan- and Darling-Rivers by Mr. R. Bennett.

*Eragrostis tenella*, Beauvois.

*Chloris scariosa*, F. v. M.

*Astrebla pectinata*, F. v. M.



*Andropogon Australis*, Sprengel. Along with the normal form a variety, remarkable for its quite pale vestiture.

*Andropogon Gryllus*, Linné.

*Anthistiria ciliata*, Linné, fil.

*Anthistiria membranacea*, Lindley.

*Erianthus fulvus*, Kunth.

*Cheilanthes tenuifolia*, Swartz.

*Cheilanthes vellea*, F. v. M.

Mr. King's collection contains also another *Stemodia*, which was not known from Australia before, and seems also unrecorded from Southern Asia or elsewhere. I have designated it specifically with the finder's name, but in absence of fruit the plant cannot be described satisfactorily, nor be placed sectionally into the genus, though it would likely merge into *Limnophila*. The plant is glabrous; the leaves are opposite and remain well green in drying; the upper, (which alone became available,) are linear or narrow-lanceolar and not distinctly denticulated; the flowers are nearly sessile, solitary in the axils; the bracteoles narrow-lanceolar, much shorter than the calyx; the three outer segments of the latter are  $\frac{1}{2}$ — $\frac{2}{3}$ -inch long, of herbaceous texture, almost lanceolar, the two inner very considerably narrower, but nearly as long; the corolla is glabrous, except inside near the base, and a little hairiness occurs also on the upper lobes; the tube is broadly cylindrical, almost as long as the labia; the upper lip is bifid, thus producing orbicular-cuneate lobes; the lower lip is bluntly 3-dentated; the filaments are conspersed with stipitate minute glands; the anthers have their cells parallel but almost disconnected, and are fixed from a dorsal small protuberance to the filament; the style is glabrous; the stigma divided into two semi-orbicular lobes; the ovary ovate-conical, glabrous and pointed.

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ART. VI.—*On the Possibility of the Force Producing Gravitation not acting directly on every Particle of a Planet.*

BY T. WAKELIN, B.A.

[Read 10th June, 1886.]